IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR LETTERS PATENT

TITLE: INFORMATION PROCESSING APPARATUS AND
                 METHOD, AND PROGRAM STORING MEDIUM

INVENTORS: Mitsuyuki HATANAKA, Mikiko SAKURAI

William S. Frommer
Registration No. 25,506
FROMMER LAWRENCE & HAUG LLP
745 Fifth Avenue
New York, New York   10151
Tel. (212) 588-0800

INFORMATION PROCESSING APPARATUS AND METHOD, AND

PROGRAM STORING MEDIUM

BACKGROUND OF THE INVENTION

1.   Field of the Invention

The present invention relates to an information

processing apparatus and method, and program storing medium,

and particularly relates to an information processing

apparatus and method, and program storing medium, for, at

the time of at the time of recording contents stored on a

first recording medium onto a second recording medium,

searching for and displaying information regarding contents

stored on the first recording medium, which is already

recorded on the second recording medium.

2.   Description of the Related Art

Some information processing apparatuses such as

personal computers are capable of reading out contents such

as music data from CDs (Compact Disks) and the like and

recording the contents read out therefrom to recording media

such as hard disks or the like (i.e., making audio

recordings of the contents).

However, there has been a problem in that in the event

that contents already recorded on a recording medium are to

be readout from a CD and recorded again with the bit-rate or

the like thereof changed, checking how many times the

contents already recorded have been recorded necessitates the user to display a list of contents recorded on the recording medium and searching through all of the contents one by one, so in the event that the number of the contents already recorded therein is in the hundreds or thousands, the searching task is extremely troublesome. Also, in the event of recording the contents again without searching for music data already recorded, information of the contents such as the artist name, album title, and titles must be edited again from the beginning, and further, there is the possibility that exactly the same contents may be recorded with the same bit-rate, which would be a waste of hard disk capacity.

SUMMARY OF THE INVENTION

The present invention has been made in light of the above problems, and accordingly it is an object thereof to search for and display already-recorded contents information at the time of recording contents such as music data onto a recording medium.

The information processing apparatus according to the present invention comprises: recording means for recording the contents recorded on the first recording medium onto the second recording medium; recording history information storing means for storing information regarding the contents

as recording history information at the time of the contents recorded on the first recording medium being recorded onto the second recording medium by the recording means; and display means for searching for information regarding the contents stored as recording history information by the recording history information storing means at the time of the contents recorded on the first recording medium being recorded onto the second recording medium again by the recording means, and displaying the information.

The recording history information may contain audio recording history information which records the number of times that audio recording has been made for each track of the first recording medium, title saving information of the contents, and play list information.

The information processing method according to the present invention comprises: a recording step for recording the contents recorded on the first recording medium onto the second recording medium; a recording history information storing step for storing information regarding the contents as recording history information at the time of the contents recorded on the first recording medium being recorded onto the second recording medium by the processing in the recording step; and a display step for searching for information regarding the contents stored as recording history information by the processing in the recording

history information storing step at the time of the contents recorded on the first recording medium being recorded onto the second recording medium again by the processing in the recording step, and displaying the information.

The program stored in the program storing medium according to the present invention comprises: code for a recording control step for controlling recording of the contents recorded on the first recording medium onto the second recording medium; code for a recording history information storing control step for controlling storing of information regarding the contents as recording history information at the time of the contents recorded on the first recording medium being recorded onto the second recording medium by the processing in the recording control step; and code for a display step for searching for information regarding the contents stored as recording history information by the processing in the recording history information storing control step at the time of the contents recorded on the first recording medium being recorded onto the second recording medium again by the processing in the recording control step, and controlling displaying of the information.

With the information processing apparatus and method, and program storing medium, according to the present invention, at the time of contents recorded on a first

recording medium being recorded onto a second recording medium, information regarding the contents is stored as recording history information, and at the time of the contents recorded on the first recording medium being recorded to the second recording medium again, the information regarding the contents stored as recording history information is searched for and displayed.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagram illustrating an embodiment of the music data managing system according to the present invention;

Fig. 2 is a diagram describing the configuration of the personal computer 1;

Fig. 3 is a block diagram describing the configuration of the functions of the personal computer 1 shown in Fig. 2;

Fig. 4 is a diagram describing title saving information;

Fig. 5 is a diagram illustrating a display example of a window in the event that a CD tab is active;

Fig. 6 is a flowchart for describing the processing at the time of mounting a CD;

Fig. 7 is a flowchart describing audio recording processing;

Fig. 8 is a diagram illustrating a display example of a

window in the event that the CD tab is active;

Fig. 9 is a diagram illustrating a display example of a window in the event that the CD tab is active;

Fig. 10 is a diagram illustrating a display example of a window in the event that a play list tab is active;

Fig. 11 is a diagram illustrating a display example of a dialog box for selecting a play list, displayed in the window in the event that the CD tab is active;

Fig. 12 is a diagram illustrating a display example of a window in the event that the CD tab is active;

Fig. 13 is a flowchart describing saving processing for title saving information;

Fig. 14 is a diagram illustrating a display example of a shortcut icon;

Fig. 15 is a flowchart describing shortcut icon playing processing; and

Fig. 16 is a diagram illustrating a display example of a window displayed on the display at the time of the shortcut icon playing processing.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 is a diagram illustrating an embodiment of the contents data managing system according to the present invention. A personal computer 1 is connected to a network 2 comprising a Local Area Network, the Internet, or the like.

The personal computer 1 takes music data received from an EMD (Electrical Music Distribution) server 3 or read from a CD (Compact Disk) (such music data will hereafter be referred to as "contents") and either records the contents as such, or converts the contents into a predetermined compression format (e.g., ATRAC3 (Registered Trademark)) and also encrypts the contents with an encrypting format such as DES (Data Encryption Standard) and then records the contents.

The personal computer 1 records rights information indicating usage conditions of the contents, corresponding to the contents recorded as enciphered data.

The rights information indicates, for example, the number of portable devices (hereafter also referred to as simply "PD") which can simultaneously use the contents corresponding to the rights information (the number of PDs which can check-out, as described later). Even in the event that there has been check-out of the contents to the number of times indicated in the rights information, the personal computer 1 is capable of playing the contents.

Also, the rights information indicates that copies can be made. In the event that the contents are copied to the portable devices 5-1 through 5-3, the personal computer 1 is still capable of playing the contents recorded therein. The number of times that the contents can be recorded to the portable devices 5-1 through 5-3 may be restricted. In this

case, the number of times that copies can be made never increases.

Also, the rights information indicates whether or not the contents can be moved to another personal computer, and so forth. After the contents are moved to the portable devices 5-1 through 5-3, the contents recorded in the personal computer 1 cannot be used any more (either the contents are deleted, or the usage conditions are changed so that the contents are no longer usable).

The personal computer 1 stores the contents which are recorded in an encrypted state along with the data relating to the contents (i.e., music piece title, playing conditions, etc.) to the portable device 5-1 that is connected thereto via a USB (Universal Serial Bus) cable, and also updates the rights information corresponding to the stored contents in accordance with the storing of the contents in the portable device 5-1 (hereafter referred to as "check-out"). More specifically, in the event of check-out, the number of times that check-out can be performed in the rights information corresponding to the contents recorded in the personal computer 1 is decremented by 1. When the number of times that check-out can be made reaches zero, the corresponding contents cannot be checked-out.

The personal computer 1 stores the contents which are recorded in an encrypted state along with the data relating

to the contents to the portable device 5-2 that is connected thereto via a USB cable, and also updates the rights information corresponding to the stored contents in accordance with the storing of the contents in the portable device 5-2. The personal computer 1 stores the contents which are recorded in an encrypted state along with the data relating to the contents to the portable device 5-3 that is connected thereto via a USB cable, and also updates the rights information corresponding to the stored contents in accordance with the storing of the contents in the portable device 5-3.

Also, the personal computer 1 causes the portable device 5-1 connected thereto via a USB cable to delete (or render unusable) the contents which the personal computer 1 has checked-out to the portable device 5-1, and updates the rights information corresponding to the deleted contents (hereafter referred to as "check-in"). More specifically, at the time of check-in, the number of times that check-out can be performed in the rights information corresponding to the contents recorded in the personal computer 1 is incremented by 1.

The personal computer 1 causes the portable device 5-2 connected thereto via a USB cable to delete (or render unusable) the contents which the personal computer 1 has checked-out to the portable device 5-2, and updates the

rights information corresponding to the deleted contents. The personal computer 1 causes the portable device 5-3 connected thereto via a USB cable to delete (or render unusable) the contents which the personal computer 1 has checked-out to the portable device 5-3, and updates the rights information corresponding to the deleted contents.

The personal computer 1 cannot check-in contents checked-out to the portable device 5-1 by another personal computer not shown in the drawings. The personal computer 1 cannot check-in contents checked-out to the portable device 5-2 by another personal computer. The personal computer 1 cannot check-in contents checked-out to the portable device 5-3 by another personal computer.

In response to a request from the personal computer 1, the EMD server 3 supplies contents to the personal computer along with data relating to the contents (e.g., music piece title (hereafter may be referred to simply as "title"), playing restrictions, etc.), via the network 2.

The contents which the EMD server 3 supplies are encoded by a predetermined encoding method, and encrypted with a predetermined encryption method.

In response to a request of the personal computer 1, a WWW (World Wide Web) server 4 supplies data corresponding to a CD from which contents are read (e.g., CD album title, CD record company, etc.) and data corresponding to the contents

read from a CD (e.g., music piece title, name of composer (hereafter may be referred to as "artist name"), etc.), to the personal computer 1.

The portable device 5-1 stores the contents supplied from the personal computer 1 (i.e., check-out contents) along with data relating to contents (e.g., music piece title, playing restrictions, etc.). The portable device 5-1 plays the stored contents based on the data relating to the contents, and outputs the contents to an unshown headphone set or the like.

For example, in the event that a user attempts to play contents a number of times exceeding the number of playing times which is playing restrictions stored as data relating to the contents, the portable device 5-1 stops playing of the corresponding contents. In the event that a user attempts to play contents after expiration of the playing period which is playing restrictions stored as data relating to the contents, the portable device 5-1 stops playing of the corresponding contents.

The user can remove the portable device 5-1 storing the contents from the personal computer 1 carry the portable device 5-1, and further play the contents stored therein so that music or the like corresponding to the contents can be listened to through unshown headphones or the like.

The portable device 5-2 stores the contents supplied

from the personal computer 1 along with data relating to contents. The portable device 5-2 plays the stored contents based on the data relating to the contents, and outputs the contents to an unshown headphone set or the like. The user can remove the portable device 5-2 storing the contents from the personal computer 1 carry the portable device 5-2, and further play the contents stored therein so that music or the like corresponding to the contents can be listened to through unshown headphones or the like.

The portable device 5-3 stores the contents supplied from the personal computer 1 along with data relating to contents. The portable device 5-3 plays the stored contents based on the data relating to the contents, and outputs the contents to an unshown headphone set or the like. The user can remove the portable device 5-3 storing the contents from the personal computer 1 carry the portable device 5-3, and further play the contents stored therein so that music or the like corresponding to the contents can be listened to through headphones or the like.

In the following description, the portable devices 5-1 through 5-3 will be referred to simply as portable device 5, unless there is the need to distinguish between the individual portable devices 5-1 through 5-3.

Fig. 2 is a diagram describing the configuration of the personal computer 1. A CPU (Central Processing Unit) 11

performs the actual execution of various application programs for realizing the later-described functions and the Operating System. ROM (Read-Only Memory) 12 generally stores, of the programs used by the CPU 11 and parameters used for computation, the fixed data. RAM (Random-Access Memory) 13 stores programs used for executing by the CPU 11 and parameters which change according to the execution thereof. These are mutually connected by a host bus 14 configured of a CPU bus or the like.

The host bus 14 is connected to an external bus 16 such as a PCI (Peripheral Component Interconnect/Interface) bus or the like via a bridge 15.

A keyboard 18 is operated by the user when inputting various instructions to the CPU 11. A mouse 19 is operated by the user when pointing instructions or selections on the screen shown on a display 20. The display 20 comprises a liquid crystal display device or CRT (Cathode Ray Tube) or the like, for displaying various types of information in text and images. A HDD (Hard Disk Drive) 21 drives hard disks, and records programs to be executed by the CPU 11 and information therein and reproduces the programs and information therefrom.

A drive 22 reads out data or programs recorded on magnetic disks 41, optical disks (including CDs) 42, magneto-optical disks 43, or semiconductor memory 44, which

are mounted as necessary, and supplies the data or programs to RAM 13 which is connected thereto via an interface 17, the external bus 16, the bridge 15, and the host bus 14.

The portable device 5-1 is connected to the USB port 23-1 via a USB cable. The USB port 23-1 outputs to the portable device 5-1 data (e.g., contents, commands for the portable device 5-1, and so forth) supplied from the CPU 11, RAM 13, or HDD 21, to the respective removable disk devices 3-1 through 3-3, via the interface 17, external bus 16, bridge 15, or host bus 14.

The portable device 5-2 is connected to the USB port 23-2 via a USB cable. The USB port 23-2 outputs to the portable device 5-2 data (e.g., contents, commands for the portable device 5-2, and so forth) supplied from the CPU 11, RAM 13, or HDD 21, to the respective removable disk devices 3-1 through 3-3, via the interface 17, external bus 16, bridge 15, or host bus 14.

The portable device 5-3 is connected to the USB port 23-3 via a USB cable. The USB port 23-3 outputs to the portable device 5-3 data (e.g., contents, commands for the portable device 5-3, and so forth) supplied from the CPU 11, RAM 13, or HDD 21, to the respective removable disk devices 3-1 through 3-3, via the interface 17, external bus 16, bridge 15, or host bus 14.

A speaker 24 outputs predetermined audio corresponding

to contents, based on audio signals supplied from the interface 17.

The keyboard 18, mouse 19, display 20, HDD 21, drive 22, USB ports 23-1 through 23-3, and speaker 24, are connected to the interface 17, and the interface 17 is connected to the CPU 11 via the external bus 16, bridge 15, and host bus 14.

A communication unit 25 has a network 2 connected thereto, for storing data supplied from the CPU 11 or HDD 21 (e.g., a request for transmitting contents) in packets of a predetermined format which are then transmitted via the network 2, and also for outputting data (e.g., contents, etc.) stored in packets received via the network 2 to the CPU 11, RAM 13, or HDD 21.

The communication unit 25 is connected to the CPU 11 via the external bus 16, bridge 15, and host bus 14.

In the following description, the USB ports 23-1 through 23-3 will be referred to simply as USB port 23, unless there is the need to distinguish between the individual USB ports 23-1 through 23-3.

Fig. 3 is a block diagram illustrating the functions of the personal computer 1 realized by the CPU 11 executing a contents managing program (application program).

A GUI (Graphical User Interface) unit 100, in response to operation of the keyboard 18 or mouse 19 by the user,

supplies a music piece title corresponding to contents which the user desires or a file name of a file where the contents are stored, to a music piece managing unit 104, and also requests registration of data corresponding to the contents, to a database 107.

The GUI unit 100 obtains data relating to the contents, e.g., data such as music piece ID, music piece title, or artist name, from the music piece managing unit 104, and displays the music piece ID, music piece title, artist name, etc., on the display 20.

In the event that user operations request playing of contents, the GUI unit 100 supplies the music piece ID corresponding to the contents regarding which playing has been requested to a contents managing processing unit 102, and also requests playing of the contents to the contents managing processing unit 102.

In the event that user operations request transfer (check-out, copying, moving, etc.) of contents, the GUI unit 100 supplies the music piece ID corresponding to the contents regarding which transfer has been requested to the transfer processing unit 103, and also requests transfer of the contents to the transfer processing unit 103.

In the event that user operations request audio recording of contents (processing wherein contents recorded on a CD (corresponding to the optical disk 42) mounted on

the drive 22 are stored in the music piece file storing units 108-1 and 108-2 (corresponding to the HDD 21), the GUI unit 100 supplies to the audio recording managing unit 101 the music piece ID corresponding to the contents regarding which audio recording has been requested, and also requests an audio recording managing unit 101 to perform audio recording of the contents. Also, the GUI unit 100 displays a play list on the display 20, containing a list of the music piece IDs and file names of the contents corresponding to the play list ID.

The audio recording managing unit 101 executes audio recording processing in the event that audio recording of the contents is requested from the GUI unit 100. At the point that a CD to be recorded is mounted in the drive 22, the audio recording managing unit 101 reads out the TOC (table of Contents) therein, and generates media-specific identification information from the number of contents contained therein, the audio recording time, and other such information.

Also, at the time of performing audio recording to contents from a CD or the like to the music piece file storing unit 108, the audio recording managing unit 101 generates or updates (in the event that audio recording history information has already been generated) audio recording history information which indicates the number of

times that each of the tracks of the CD has been recorded as audio, and stores the audio recording history information in internal memory. Also, in the event that the same CD is mounted to the drive 22 again, the audio recording managing unit 101 reads out the audio recording history information, outputs the number of times of audio recording for each of the tracks of the CD to the GUI unit 100, to be displayed on the display 20. Also, in the event of performing audio recording processing for a CD the first time, the audio recording managing unit 101 accesses a WWW server 4 or the like via the communication unit 25 and the network 2, downloads title information for the contents, and stores the downloaded title information of the contents and the media-specific identification information as title saving information in internal memory. Also, the audio recording managing unit 101 generates a play list ID serving as an index for indexing multiple contents recorded by one audio recording processing, outputs this to the music price managing unit 104 along with the contents, and records this in the music piece file storing unit 108. The title saving information will be described later with reference to Fig. 4. Also, the audio recording managing unit 101 can further perform audio recording of contents distributed from an EMD server 3, via the network 2 and the communication unit 25.

Upon a request from the GUI unit 100 to play contents,

the contents managing processing unit 102 supplies to the
music piece managing unit 104 a music piece ID corresponding
to the contents regarding which playing has been requested,
or a music piece ID corresponding to the contents contained
in the play list regarding which playing has been requested
(i.e., the music piece ID of contents recorded along with
the play list ID corresponding to the play list regarding
which playing has been requested), and also request a file
name corresponding to the contents. Upon obtaining the file
name of the music piece managing unit 104, the contents
managing processing unit 102 obtains the contents from the
music piece file storing unit 108-1 or 108-2, via the music
piece managing unit 104, file searching unit 106, and
database 107.

The contents managing processing unit 102 supplies the
obtained contents to a PC (Protected Content) plug-in 109-1
or 109-2.

Upon the contents being supplied from the contents
managing processing unit 102, in the event that the contents
are not encrypted, the PC plug-in 109-1 decodes the encoded
contents, and supplies the audio data to an audio output
unit 110-1. Upon the contents being supplied from the
contents managing processing unit 102, in the event that the
contents are encrypted, the PC plug-in 109-1 decrypts the
encrypted contents, as well as decoding the encoded contents,

and supplies the audio data to the audio output unit 110-1.
The audio output unit 110-1 generates audio signals based on
the audio data, and outputs audio from the speaker 24.

At the time that contents are supplied from the
contents managing processing unit 102, in the event that the
contents are not encrypted, the PC plug-in 109-2 decodes the
encoded contents, and supplies the audio data to an audio
output unit 110-2. Upon the contents being supplied from
the contents managing processing unit 102, in the event that
the contents are encrypted, the PC plug-in 109-2 decrypts
the encrypted contents, as well as decoding the encoded
contents, and supplies the audio data to the audio output
unit 110-2. The audio output unit 110-2 generates audio
signals based on the audio data, and outputs audio from the
speaker 24.

The user can further additionally install PC plug-ins.

In the following description, the PC plug-ins 109-1 and
109-2 will be referred to simply as PC plug-in 109, unless
there is the need to distinguish between the individual PC
plug-ins 109-1 and 109-2.

Upon a contents transfer request from the GUI unit 100,
the transfer processing unit 103 supplies the music piece
managing unit 104 with the music piece ID corresponding to
the contents regarding which transfer has been requested, as
well as requesting the file name corresponding to the

contents. The transfer processing unit 103, upon obtaining the file name from the music price managing unit 104, obtains contents corresponding to the file name from the music piece file storing unit 108-1 or 108-2 via the music piece managing unit 104, file searching unit 106, and database 107.

The transfer processing unit 103 supplies the obtained contents to the PD plug-in 111-1 or 111-2.

At the time of transferring contents to the portable device 5-1, the PD plug-in 111-1 performs mutual verification with the portable device 5-1. In the event that the mutual verification fails, the PD plug-in 111-1 does not transfer contents to the portable device 5-1.

At the time that contents are supplied from the transfer processing unit 103, in the event that the contents are encrypted, the PD plug-in 111-1 supplies the contents along with the data relating to the contents to the portable device 5-1. Upon the contents being supplied from the transfer processing unit 103, in the event that the contents are not encrypted, the PD plug-in 111-1 encrypts the contents, and supplies the encrypted contents along with the data relating to the contents to the portable device 5-1. Incidentally, the processing for mutual verification may be executed at the point that the portable device 5-1 is connected to the personal computer 1.

At the time of transferring contents to the portable device 5-2, the PD plug-in 111-2 performs mutual verification with the portable device 5-2. In the event that the mutual verification fails, the PD plug-in 111-2 does not transfer contents to the portable device 5-2.

At the time that contents are supplied from the transfer processing unit 103, in the event that the contents are encrypted, the PD plug-in 111-2 supplies the contents along with the data relating to the contents to the portable device 5-2. Upon the contents being supplied from the transfer processing unit 103, in the event that the contents are not encrypted, the PD plug-in 111-2 encrypts the contents, and supplies the encrypted contents along with the data relating to the contents to the portable device 5-2. Incidentally, the processing for mutual verification may be executed at the point that the portable device 5-2 is connected to the personal computer 1.

The user can further additionally install PD plug-ins.

In the following description, the PD plug-ins 111-1 and 111-2 will be referred to simply as PD plug-in 111, unless there is the need to distinguish between the individual PD plug-ins 111-1 or 111-2.

The music piece managing unit 104 records data in the database 107, such as the music piece title corresponding to the contents, or file name, media-specific identification

information corresponding to the contents, and play list ID, etc., and reads out the music piece title, file name, etc., from the database 107. Upon receiving the music piece title or file name from the GUI unit 100, the music piece managing unit 104 adds a record to the database 107, and records the music piece title or file name as a record item, and further adds media-specific identification information, and the play list ID as well.

In response to a request from the GUI unit 100, the music piece managing unit 104 reads out all music piece titles and music piece IDs or the like recorded in the database 107 and supplies these to the GUI unit 100. Also, upon being supplied with the media-specific identification information from the audio recording managing unit 101, the music piece managing unit 104 reads out the file names and music piece IDs corresponding to the media-specific identification information from the database 107 and supplies these to the GUI unit 100. Further, upon being supplied with a play list ID from the audio recording managing unit 101, the music piece managing unit 104 supplies the music file names and music piece IDs corresponding to the play list ID to the GUI unit 100.

Upon the music piece ID being supplied from the contents managing processing unit 102, the music piece managing unit 104 reads the file name corresponding to the

music piece ID from the database 107, and supplies the file name that has been read out to the contents managing processing unit 102. Upon the music piece ID being supplied from the transfer processing unit 103, the music piece managing unit 104 reads out the file name corresponding to the music piece ID from the database 107, and supplies the file name that has been read out to the transfer processing unit 103.

In response to a request from the music piece managing unit 104, the file searching unit 106 searches for a file corresponding to the file name from the music piece file storing unit 108-1 or 108-2, based on the file name obtained from the database 107. The file searching unit 106 either supplies the file read out from the music piece file storing unit 108-1 or 108-2 to the music piece managing unit 104, or changes the file name of the file and supplies the file with the changed file name to the music piece managing unit 104.

The music piece managing unit 104 supplies the file storing the contents supplied from the file searching unit 106 to the contents managing processing unit 102 or the transfer processing unit 103.

The database 107 records data relating to the contents, such as, for example, the music piece ID, music piece title, file name, media-specific identification information, play list ID, and other attributes. The database 107 is stored

in the HDD 21.

Next, title saving information stored by the audio recording managing unit 101 in the internal memory thereof will be described with reference to Fig. 4. Title saving information is information recorded in the internal memory of the audio recording managing unit 101, containing information such as the media-specific identification information of the audio-recorded CD, album title of the CD, title of each of the contents, artist name, and URL (Universal Resource Locator) of the server providing information for the contents. Also, the title saving information is read out by the GUI unit 100, and also has information serving as display data for executing audio recording processing and the like.

In this case, Line 1 in Fig. 4 is shown as "DISCID = 55443322", showing that media-specific identification information is recorded. The media-specific identification information is a value obtained by the number of the contents recorded in the TOC of every CD (i.e., the number of music pieces) and the total recording time and so forth ("55443322" in this case), with CDs being identified by this media-specific identification information.

Line 2 shows "DTITLE = KING/RIDING", indicating that "KING/RIDING" has been registered as the title of this CD. Line 3 through Line 10 show "TTITLE0 = RIDING", "TTITLE1 =

TEN LONG", "TTITLE2 = KEY", "TTITLE3 = MARY", "TTITLE4 = THREE", "TTITLE5 = HELP", "TTITLE6 = I", AND "TTITLE7 = WORRIED", thus recording the titles of the contents recorded therein by track. In this case, this indicates that the title of the contents corresponding to track No. 0 (the contents of the first piece) is "RIDING", that the title of the contents corresponding to track No. 1 (the contents of the second piece) is "TEN LONG", and that the titles of the contents of the third piece on are "KEY", "MARY", "THREE", "HELP", "I", and "WORRIED". Note that in this case, the titles for the track Nos. 8 and 9 in Line 11 and Line 12 are blank.

Line 13 shows "EXTD = ARTIST:KING", indicating that the name of the artist is "KING". Lines 14 and 15 show "EXTD = URL1:ARTIST DISCOGRAPHY http://www.cdnew.co.jp/artist.asp.artistID=1122" and "EXTD = URL2:CDNEW JAPAN HOME http:www.cdnew.co.jp/index.asp", each recording information of the WWW server 4 from which the information in the above Line 1 through Line 13 has been obtained. "ARTIST DISCOGRAPHY" and "CDNEW JAPAN HOME" are names of the WWW server 4, and the following "http://www.cdnew.co.jp/artist.asp.artistID=1122" and "http:www.cdnew.co.jp/index.asp" are the URLs thereof.

Next, with reference to Fig. 5, description will be made regarding a display example of a window displayed by

the GUI unit 100 on the display 20, based on commands of the audio recording managing unit 101 from the contents managing program (application program), in the event that a CD (corresponding to the optical disk 42 in Fig. 2). In the window are a CD tab 201, an import tab 202, a play list tab 203, a check-in/out tab 204, an equipment/media tab 205, and an internet tab 206. Clicking on these for activation displays the respective display screen in the field 231. In this case, the CD tab 201 is in an active state, and information relating to the CD is displayed in the field 231.

An eject button 211 is displayed below the CD tab 201, and clicking this ejects the CD mounted on the drive 22. A recording stop button 212 and a recording start button 231 are displayed to the right side of the eject button 211, and clicking on the recording start button 213 starts audio recording of the CD contents specified in the field 231 to the HDD 21, while clicking the recording stop button 212 during audio recording stops the audio recording processing.

A bit-rate display space 214 is displayed to the right side of the audio recording start button 213, and clicking this displays a drop-down list of various bit-rates, thereby allowing the bit-rate to be used for audio recording with a pointer. A drive display space 215 indicating the drive to which the CD to be recorded has been mounted is displayed to the right side of the bit-rate display space 214, and

clicking this displays a drop-down list of selectable drive names, which can be selected with the pointer. Further, to the right of the drive display space 215 is displayed an audio recording destination display space 216, and clicking this displays a drop-down list of audio recording destinations such as the HDD 21 and portable devices 5-1 through 5-3, etc., which can be selected with the pointer.

A task bar 217 is displayed above the tabs. The task bar 217 has displayed thereupon a stop button 217a, a play button 217b, and other operating buttons, whereby various types of operation such as playing and stopping of contents, specified in the field 231, can be carried out. Also, an album title display space 217c is displayed above the stop button 217a, and in this case, "RIDING" is displayed as the album title.

An album title display space 211 is displayed below the eject button 211, where the album title of the inserted CD is displayed. In this case, "RIDING" is displayed as the album title. Displayed to the right side of the album title display space 221 is an artist name display space 222, and in this case, "KING" is displayed as the artist name. To the right of the artist name display space 222 is displayed a genre display space 223, and in this case, "ROCK" is displayed.

The contents of the inserted CD are shown in the field

231, in CD track order from the top. For each of the contents, the CD track No., title, artist, genre, play time, capacity, and recording state are displayed. In the space where the CD track No. is displayed, in addition to the CD track No. are displayed, from the left, check boxes 224a through 224h, and symbols indicating that the contents are playable (in this case, a treble clef is displayed). A check mark appears when the check boxes 224a through 224h are clicked, and clicking again removes the check mark. The contents regarding which the check boxes 224a through 224h have been checked (those displaying a check mark) are the object of audio recording from the CD. In this case, all of the check boxes 224a through 224h are checked, so in the event that the audio recording start button 213 is clicked in this state, audio recording of all of the contents from the CD to the HDD 21 will be executed. Also, the treble clef symbol indicates that the corresponding contents are in a currently playable state, and the display changes to, for example, a rest mark (see Fig. 9) in the event that the contents are not playable.

Next, with reference to the flowchart in Fig. 6, the processing of mounting the CD at the time of recording the contents of the CD with the personal computer 1 will be described. Upon the CD being mounted to the drive 22, in step S1, the audio recording managing unit 101 judges

whether or not the mounted CD is an audio CD (i.e., a CD wherein music contents are recorded thereupon), and in the event that judgment is made that the CD is an audio CD, the processing proceeds to step S2.

In step S2, the audio recording managing unit 101 reads in the TOC (Table of Contents) information recorded in the CD, and generates media-specific identification information from the number of contents and the total recording time and so forth of the CD.

In step S3, the audio recording managing unit 101 sends the media-specific identification information to the music piece managing unit 104, and makes an inquiry regarding whether or not a play list ID corresponding to the same media-specific identification information registered previously exists or not. In the event that the same media-specific identification information does not exist, and judgment is made that a corresponding play list ID does not exist, the processing proceeds to step S4.

In step S4, the audio recording managing unit 101 searches audio recording history information existing in memory built into itself, and judges whether or not audio recording history of each of the tracks of the mounted CD exist therein. In step S5, in the event that judgment is made that audio recording history information of the tracks of the CD exists therein, the audio recording managing unit

101 tabulates the number of times of audio recording of the contents from the searched audio recording history information, and displays this on the display 20. At this time, "recorded" is displayed in the audio recording state display space on the field 231, for example (see Fig. 9). Further, in the event that the history of recording shows that the track has been recorded two times, for example, "2" is displayed to the right of the "recorded" number of times history in the recording state display space as the number of times history (see Fig. 11).

In step S6, the audio recording managing unit 101 causes the GUI unit 100 to check the check boxes of unrecorded track an make a display thereof. For example, in the event that none of the contents are in a recorded state, the check boxes 224a through 224h for all of the tracks are checked, as shown in Fig. 5.

In step S7, the recording managing unit 101 searches the title saving information stored in the built-in memory, based on the generated media-specific identification information. In step S8, the audio recording managing unit 101 judges whether or not title saving information containing the generated media-specific identification information exists in the built-in memory thereof, and in the event that judgment is made that this information exists therein, the flow proceeds to step S9.

In step S9, the audio recording managing unit 101 obtains information of the titles of each of the contents, saved in the searched title saving information, which is output to the GUI unit 100 and displayed on the display 20. For example, once the title saving information shown in Fig. 4 is obtained, the title and artist name, of each of the contents are displayed on the field 231, as shown in Fig. 5.

In step S10, the audio recording managing unit 101 registers the album title as a new play list, and transfers this along with the corresponding play list ID to the music piece managing unit 104, where it is stored. For example, in a case such as shown in Fig. 5, "RIDING" is registered as a play list.

In step S11, the audio recording managing unit 101 judges whether or not the audio recording start button 213 has been clicked, and in the event that judgment is made that it has been clicked, in step S12 the audio recording managing unit 101 executes audio recording processing.

Now, the audio recording processing will be described with reference to Fig. 7. In step S31, the audio recording managing unit 101 makes inquiry to the GUI unit 100, and reads out the selected contents from the CD. For example, as shown in Fig. 8, in the event that the check boxes 224a, 224b, 224e, and 224g are checked and the audio recording start button 213 has been clicked, the contents of the track

Nos. 1, 2, 5, and 7 are read out from the CD.

In step S32, the audio recording managing unit 101 compresses the contents read out from the CD according to a predetermined format, encrypts, and outputs these to the music piece managing unit 104. In step S33, the music piece managing unit 104 stores rights information in a rights storing unit 105, and registers the encrypted contents in the database 107.

In step S34, the music piece managing unit 104 stores the encrypted contents in the music piece file storing unit 108.

While the processing of the steps S31 through 34 is going on, the GUI unit 100 displays an audio recording state display space 241 in the window as shown in Fig. 9, and displays an audio recording state display bar 241a and remaining time display space 241b therein. The audio recording state display bar 241a indicates the entire time necessary for all selected contents to be recorded, and as the processing proceeds, a bar of a predetermined color indicating the percentage completed is displayed from the left side in the figure. At the point that all processing is finally completed, the bar of the predetermined color is displayed over the entirety of the audio recording state display bar 241a. Also, "recorded" is displayed in the recording state display space for the contents regarding

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which recording has been completed, for example the contents
of the track Nos. 1 and 2 in Fig. 9, and for contents
currently undergoing audio recording, the progress of the
audio recording thereof is displayed with 100% being the
entirety thereof.   In this case, "4%" is displayed in the
audio recording state display space for the contents of
track No. 5, indicating that 4% of the entire amount of the
contents of track No. 5 is completed.

In step S35, the audio recording managing unit 101
updates the audio recording history information recording
the number of times of audio recording for each track. Also,
as shown in Fig. 10, the GUI unit 100 displays a play list
wherein the play list tab 203 is active on the display 20,
as shown in Fig. 10.   In the play list window shown in Fig.
10, a list of audio-recorded contents is displayed in the
field 231.   Also, a field 252 is displayed at the left side
of the field 231.   In this case, "RIDING" is displayed in
the play list 251.

Also, the field 252 displays multiple play lists in
tree fashion.   That is, at the top level of the field 252
there are displayed the two play lists "PAINT" and "RIDING"
as branches of the space displayed as "ALL PLAY LISTS".   In
this case, "RIDING" is active in the field 252, so the
contents displayed in the field 231 are those contained in
the play list for "RIDING".

Also, branches for classifying the contents by "album title", "artist name", and "genre" are provided under "ALL PLAY LISTS".

Now, let us return to the description of the flowchart shown in Fig. 6.

In the event that judgment is made in step S1 that the CD is not an audio CD, in step S13 the audio recording managing unit 101 causes the GUI unit 100 to make a display on the display 20 to the effect that a CD other than an audio CD is mounted on the display 20.

In the event that judgment is made in step S3 that a play list ID corresponding to the media-specific identification information has been searched, in step S14 the GUI unit 100 displays the contents contained in the play list corresponding to the searched play list ID in the window wherein the CD tab 201 is active as shown in Fig. 11, and further a dialog box 261 indicating selection of a play list is displayed, and a window is displayed inquiring whether to add the audio recording of the CD to an already-existing play list, or to generate a new play list.

At this time, as shown in Fig. 11, a button 262a which is clicked in the event of selecting a new play list, and a button 262b selected in the event of adding to an already-existing play list, are displayed in the dialog box 261. In the event that the button 262a is clicked, the button 262a

is selected (a dark circle is displayed in the button), and the name of a new play list can be input in the field 264. In the event that the button 262b is clicked, the button 262b is selected (as with the present case), and play lists registered in the field 265 are displayed. Note that the play lists in the field 265 can be newly overwritten and registered.

An audio recording start button 263a is displayed under the field 265, and clicking this starts audio recording. A cancel button 263b is displayed to the right side of the audio recording start button 263a, which cancels processing in the event that it is clicked. A help button 263c is displayed to the right of the cancel button 263b, which brings up a help screen in the event that it is clicked.

Now, let us return to the description of the flowchart shown in Fig. 6.

In step S15, the audio recording managing unit 101 judges whether or not a new play list has been selected and the audio recording start button 263a has been clicked, and in the event that the button 262a has been clicked so that a new play list is selected and the audio recording start button 263a has been clicked, the processing proceeds to step S4, and the subsequent processing is repeated.

In step S15, in the event that judgment is made that a new play list has not been selected and the audio recording

start button 263a has been clicked, i.e., in the event that

the button 262b is clicked and the audio recording start

button 263a has been clicked in the state of an already-

existing play list being selected, the processing proceeds

to step S12, and the above-described audio recording

processing is executed.

In step S4, in the event that judgment is made that no

audio recording history information exists for the tracks,

the tabulating processing of the audio recording history

information in step S5 is skipped, and the flow proceeds to

step S6.

In the event that judgment is made in step S8 that no

title saving information exists, in step S16 the audio

recording managing unit 101 accesses the WWW server 4 via

the communication unit 25 and network 2, and searches for

title information of the contents contained in the CD

inserted into the drive 22.

In step S17, the audio recording managing unit 101

judges whether or not title information has been searched,

and in the event that judgment is made that title

information has been searched, the processing thereof

proceeds to step S9, and the subsequent processing is

repeated. In step S17, in the event that judgment is made

that title information has not been searched, in step S18

the GUI unit 100 displays "untitled" in the space for the

title name for the contents displayed in the field 231 as shown in Fig. 12, and "Unknown" is displayed in the spaces for the artist name and the genre. At this time, the user can input the title artist name, and genre, as necessary.

Due to the above processing, at the point that a CD regarding which the user is going to record is mounted to the drive 22, in the event that the CD has been recorded in the past, information such as the number of times of audio recording of the contents and the bit-rate is displayed even if the user does not take into consideration whether or not the CD has been recorded in the past, so erroneously making multiple audio recordings of the same contents can be avoided, thereby preventing wasting the capacity of the HDD 21. Also, in the event of recording the same contents with different bit-rates, mounting the CD for audio recording in the drive 22 causes information of contents recorded in the past to be searched and displayed, so the user can specify only the bit-rate of the contents to be recorded anew, without executing any searching processing.

Further, contents information is searched and displayed in increments of play lists of audio recordings made in the past, so in the event that there are contents of the multiple contents registered in the play list regarding which audio recording could not be completed and the audio recording thereof was discontinued for example, the

unrecorded contents can be consecutively recorded simply by mounting the same CD in the drive 22, and searching for or editing a new title can be omitted at this time.

Next, description of the saving processing for title saving information will be described with reference to the flowchart shown in Fig. 13. In step S41, the audio recording managing unit 101 judges whether or not the audio CD mounted on the drive 22 has been ejected by clicking the eject button 211 for example (i.e., whether or not ejecting processing has been performed), and in the event that judgment is made that the audio CD has not been ejected, the processing proceeds to step S42.

In step S42, the audio recording managing unit 101 judges whether or not the drive has been switched by the user clicking on the CD drive display space 215 being clicked to display a drop-down list, and in the event that judgment is made that the CD drive has been switched over, the processing proceeds to step S43.

In step S43, the audio recording managing unit 101 judges whether or not audio recording has been completed, i.e., whether the audio recording processing of the multiple contents set as a play list has been completed for example, and in the event that judgment is made that the audio recording processing of the contents has not been completed, the processing returns to the processing in step S41, and

the subsequent processing is repeated.

In the event that judgment is made in step S41 that the audio CD has been ejected, in the event that judgment is made in step S42 that the CD drive has been switched over, and in the event that judgment is made in step S43 that the audio recording processing has completed, the audio recording managing unit 101 in step S44 saves the album title and title information of the present CD as title saving information, in the internal memory (i.e., overwrites the information).

That is, while the application software is activated, the audio recording managing unit 101 constantly monitors CD ejecting, drive switching, and audio recording processing completion, and in the event that any of these are executed, rewrites the title saving information.

Due to the above processing, desired contents can be played by selecting the contents in the window shown in Fig. 10 and clicking the play button 217b for example, but also a desired play list can be played all at once simply by clicking a predetermined icon from a state wherein application software is not activated.

Next, description will be made regarding the processing wherein a shortcut icon corresponding to a recorded play list is generated and wherein multiple contents registered in a play list are played all at once by clicking the

shortcut icon in a state that the above-described window has not been brought up (in a state wherein the application software is not activated).

For example, dragging the play list name display portion 252a showing "RIDING" and dropping this on the screen at a place other than the window of the application software (e.g., the desktop screen of Windows 98 (a registered trademark)) generates a shortcut icon 281 such as shown in Fig. 14 wherein the play list ID corresponding to "RIDING" is registered, which is displayed on the display 20.

Now, the playing processing using this shortcut icon 281 will be described with reference to the flowchart shown in Fig. 15.

In step S51, the operating software being executed by the CPU 11 of the personal computer 1 judges whether or not the shortcut icon has been clicked. This is repeated until it is clicked, upon which the processing proceeds to step S52.

In step S52, the operating system activates the application software for the contents managing program. In step S53, the GUI unit 100 of the activated contents managing program displays a predetermined window. In this case, "RIDING" is displayed on the shortcut icon 281, so a window in the state with the play list tab 203 active as shown in Fig. 10 for example, is displayed. Of course,

arrangements may be made wherein other windows are displayed.

In step S54, the contents managing unit 102 makes a request to the music piece managing unit 104 for the contents having the play list ID registered to the shortcut icon 281. In this case, the shortcut icon 281 is displayed as "RIDING", and the contents of the play list ID corresponding to the play list "RIDING", i.e., the contents of "RIDING", "TEN LONG", "THREE", and "I", are requested from the music piece managing unit 104.

In step S55, the music piece managing unit 104 causes the file searching unit 106 to search for contents corresponding to the requested play list ID from the database 107, to be read out from the music piece file storing unit 108 and sent to the contents managing unit 102. That is to say, in this case, the music piece managing unit 104 sequentially sends the contents of "RIDING", "TEN LONG", "THREE", and "I" to the contents managing unit 102.

In step S56, the contents managing unit 102 plays the predetermined contents from the speaker 24 via the PC plug-in 109 and audio output unit 110. In this case, the audio output unit 110 sequentially outputs the contents of "RIDING", "TEN LONG", "THREE", and "I", from the speaker 24.

Thus, generating a shortcut icon 281 which is displayed on the display allows the user to play multiple contents registered in a desired play list simply by clicking on the

shortcut icon 281.

Also, in the processing of the above step S53, the window which the GUI unit 100 displays on the display 20 may be, for example, a window wherein the play list tab 203 is active as with that shown in Fig. 10, or may be a window wherein another tab is active. For example, an arrangement may be made wherein, as shown in Fig. 16, the GUI unit 100 displays only a task bar 217 called a "simple mode window". Further, an arrangement may be made wherein the window which the GUI unit 100 displays on the display 20 is the window displayed last when the application software was running (i.e., the window that was being displayed when the application software was quit). Also, an arrangement may be made wherein, in the processing of step S53, the window displayed on the display 20 is minimized, i.e., the window is not displayed on the display and only the contents a replayed from the speaker 24.

Further, in the event that a play list is made up of contents of a certain CD album for example, the shortcut icon 281 may display an image of the jacket of the CD.

While the above series of processes can be executed by hardware, this can also be executed by software. In the event of executing the series of processes by software, the program making up the software is provided in dedicated hardware which is assembled into a computer, or is installed

to, for example, a general-purpose personal computer, capable of executing various functions by installing various types of programs, from a program storing medium.

A program storing medium which stores the program to be installed in a computer so as to enable the computer to execute the program comprises, as shown in Fig. 2, packaged media such as magnetic disks 41 (including floppy disks), optical disks 42 (CD-ROMs (Compact Disk Read-Only Memory)), DVDs (Digital Versatile Disks), magneto-optical disks 43 (including MDs (Mini-Disks)), or semiconductor memory 44 or the like, or ROM 12 or a HDD 21 where the program is temporarily or permanently stored. Storing of the program to the program storing medium is performed using online or wireless communication media such as a Local Area Network, the Internet, digital satellite broadcasting, etc., via an interface such as a router or modem, as necessary.

In the present specification, the steps describing the programs stored in the program storing medium may of course be executed in the time sequence following the order in which they are listed, but are not restricted to being executed in this time sequence, and may be executed in parallel or individually.

Also, in the present specification, the term "system" represents all equipment made up of multiple devices.

With the information processing apparatus and method,

and program storing medium, according to the present invention, at the time of contents recorded on a first recording medium being recorded onto a second recording medium, information regarding the contents is stored as recording history information, and at the time of the contents recorded on the first recording medium being recorded to the second recording medium again, the information regarding the contents stored as recording history information is searched for and displayed. Accordingly, erroneously making multiple audio recordings of contents already recorded in the past can be avoided, thereby preventing wasting the capacity of the second recording medium, and further, in the event of recording the same contents multiple times, the task of inputting information regarding the contents can be omitted.